



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,895	10/01/2004	Kazuya Maekawa	APA-0217	2978
74384	7590	10/26/2009		
Cheng Law Group, PLLC 1100 17th Street, N.W. Suite 503 Washington, DC 20036			EXAMINER MITCHELL, JAMES M	
			ART UNIT 2813	PAPER NUMBER
			MAIL DATE 10/26/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,895	Applicant(s) MAEKAWA ET AL.	
	Examiner JAMES M. MITCHELL	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53, 55 and 56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 12-15, 19-23, 25-34, 36, 39-41, 46-50, 52, 53, 55 and 56 is/are rejected.
- 7) ☒ Claim(s) 5, 7-11, 16-18, 24, 35, 38, 42-45 and 51 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to applicant's amendment filed June 18, 2009.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Protective material formed on the wheel and brittle material, and cutting the protective material after scribing are mutually exclusive since in order for the protective material to be on the wheel it must have performed a scribing step.

Claims 57 and 58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the original disclosure for cutter wheel being rolled manually. The disclosure indicates that the cutter wheel is one disclosed in WO 03/011777, which is rotationally driven by signal (Fig. 3 in WO 03/011777). See also Footnote 3.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1- 4, 19, 20, 22, 23, 25-34, 36, 46-50, 52 , 53, 55 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin et al. (U.S. 6,121,118) in combination with Siniaguine et al. (U.S. 2001/0001215), Yamamichi (JP356067933) and Hasegawa et al. (U.S. 6,461,940).

Jin (e.g. Fig. 6, 7, 12) discloses:

(cl. 1, 28) A method and apparatus for severing a brittle material substrate by inscribing (220) a scribe line (214) on a brittle material substrate(212),wherein the scribe line is formed with a scribe head comprising a cutter wheel (220) and a tip holder (holder connected to wheel not labeled; Fig. 7) that rotatably supports the cutter wheel, and

Art Unit: 2813

wherein the method comprises a first scribing step by moving the tip holder in a horizontal direction (e.g. holder and blade is moved/rolled cutter to form lines since wafer held on stage), thereby inscribing a scribe line (214) on the brittle material substrate;

(cl. 3, 30) the brittle material substrate is a single-plate brittle material substrate (e.g. single layer/substrate);

(cl. 4, 20, 31) further comprising a breaking step of breaking the brittle material substrate, after the scribing step (Fig. 4);

(cl. 19) brittle material with a functional layer (e.g. "circuits"; Col. 1, Lines 10-13);

(cl. 22 part) the brittle material with a function (e.g. circuit in layer; Col. 1, Lines 10-13);

(cl. 36, 50) a breaking device (320).

Jin does not appear to disclose simultaneously forming a vertical crack extending from the scribe line in a thickness direction of the brittle material substrate, pressing and rolling the cutter wheel on a protective layer/film prior to breaking without sliding, the wheel with grooves formed in a blade-edge ridge thereof or forming a protective material on at least one substrate surface of the brittle material.

Siniaguine teaches that cracks are formed in wafer upon sawing (Par. 0006).

It would have been obvious to one of ordinary skill in the art that cracks be simultaneous formed in the brittle material of Jin, since they occur during sawing as evidenced by Siniaguine (Par. 0006).

Neither Jin nor Siniaguine show its saw wheel the cutter wheel on a protective layer in a state where the protective material with a second function is on the brittle material prior to a breaking step.

However, Yamamichi (Fig. 1-2) utilizes a cutter wheel/protective material cutting device (4) on a protective layer (3; Fig. 2 & therefore use of applying device) with the function of protection in a state where the protective material is on the brittle material (1; Fig 2).

It would have been obvious to one of ordinary skill in the art to incorporate forming a protective material (therefore use of a protective material device) on the brittle material of Jin prior to breaking in order to protect the wafer from unwanted debris from scribing as taught by Yamamichi (Eng. Abstract).

Neither Jin, Siniaguine nor Yamamichi explicitly shows its saw wheel with grooves formed in a blade-edge ridge thereof that applies intermittent shocks to the brittle material.

However, Hasegawa (13B) grooves formed in a blade-edge ridge thereof.

It would have been obvious to one of ordinary skill in the art to incorporate grooves¹ in the blade of Jin and therefore it forms intermittent shocks by cutting through brittle material in on order to reduce swarf as taught by Hasegawa (Abstract).

With respect to clam 27 examiner takes official notice that coating is well known process to form a layer and that one of ordinary skill in the art would have found it

¹ Moreover without sliding because of grooves. Note also that even absent grooves, applicant disclosure is that sliding tends to occur that means there are instances where there is no sliding. Because scribe lines are formed it suggests no difficulty in forming lines and no sliding.

Art Unit: 2813

obvious to use a coating technique in order to form the protective material on the brittle substrate.

Claims 12-15, 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin et al. (U.S. 6,121,118), Siniaguine et al. (U.S. 2001/0001215), Yamamichi (JP356067933) and Hasegawa et al. (U.S. 6,461,940) as applied to claims 1 and 28 and further in combination with Ball (U.S. 2002/0031864).

Neither Jin, Siniaguine, Yamamichi nor Hasegawa appears to disclose the brittle material substrate is a bonded brittle material substrate formed by bonding together a first substrate and a second substrate.

However, Ball teaches bonding together a first substrate and a second substrate (104,104).

It would have been obvious to one of ordinary skill in the art to incorporate bonding together a first substrate and a second substrate with the modified process of Jin in order to provide multi-chips as taught by Ball (Fig. 5).

Allowable Subject Matter

Claims 5, 7-11, 16-18, 24, 35, 37-38, 42-45 and 51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious cutting protective after breaking

Art Unit: 2813

or forming a first protective film on the protective material after scribing but before breaking or applying a second protective material different than the first on a second substrate or applying a first protective material on second substrate and peeling off before scribing the first substrate including all the limitations of the independent claim.

Response to Arguments

Applicant's arguments filed June 18 has been fully considered but they are not persuasive.

Examiner's prior remarks are maintained and recited below, In an effort to expedite prosecution, examiner has addressed some limitations that may be applicable.

Applicant contends that the protective material is not "completely" cut at the scribed surface. The written disclosure does not inherently or explicitly corroborate the limitation nor is added to the claims². Sawing appears to be shown in applicant's figures used on a second protective layer other than the first protective layer. As for applicant's remarks regarding manual rolling, see examiner's 112 rejection³.

Applicant contends that that claims 6 and 12 are enabled, because allegedly from disclosure of Figures 1a-d it shows that after scribing applicant cut protective material. Examiner respectfully disagrees

Contrary to the allegation, the claim calls for **a protective** material to be on the substrate surface, the cutter on **the protective** material (antecedent is to the material

² Examiner recommends that applicant explicitly identify in the original disclosure where supported. If indeed supported then such a limitation should be added to the independent claims and may receive favorable consideration.

³ In addition use of a manual roller would have been obvious. See e.g. In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to

Art Unit: 2813

already on the substrate) and scribing the wafer. As such the protective layer, 2, is formed on the cutter, 40 as claimed and clearly shown in applicant's Figure 1b. In order to scribe the wafer **the blade must cut "the protective layer" first** prior to scribing as shown in applicant's Figures 1b. Since the protective layer is already cut any further cutting may cut the wafer, but that area along the protective layer is already removed.

\Rather applicant's invention is that another protective layer is cut as shown in his Figure 1c. Since the antecedent for claim 6 and 21 is drawn to the protective layer that is cut, it can not then be subsequently cut again. The enablement issue would be eliminated if applicant had amended his claim to say "cutting **a protective** material...", which would capture his invention shown in Figure 1c showing cutting a second protective material formed on the opposite die of the wafer that's been scribed.

Applicant also contends that the prior art does not show pressing and rolling, because the prior art is rotably driven and allegedly not rolled along the substrate via friction force. The claim is not limited to being rolled manually along the wafer as argues. A rotably driven wheel spins/turn over and over and therefore meets the plain and ordinary meaning of the rolling. Moreover, as the blade is pressed against the wafer and the wheel spins in order to dice the wafer into chips, the saw moves horizontally along the wafer resulting in lattice cuts that separate the chips from the wafer. While applicant is correct that one definition of rolling is to move on a surface, the claim is not so limited. Even if the blade did not move along the substrate except for the spinning blade it would still read on the plain meaning of the claim.

Art Unit: 2813

Lastly, with respect to the shape of applicant's blade, applicant attempts to distinguish his invention by noting that the prior art has a different purpose. Applicant does not allege that the prior art does not also show a grooved cutter wheel. Because the prior art's blade has the same shape as claimed it is capable of being used for the same function (e.g. preventing sliding etc.). Applicant's prevention of sliding is merely an inherent result of the blade formation, which is made obvious by the use of the same type of blade irrespective of if the prior art discloses that same advantage. See e.g. MPEP 2112 [R-3] (T)he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES M. MITCHELL whose telephone number is (571)272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew Landau can be reached on (571) 272-1731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2813

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

October 25, 2009
/James M. Mitchell/
Examiner, Art Unit 2813